St Hilary's Prep School Policy

Policy for the teaching of Digital, Design and Engineering

1. Introduction

From September 2026, Digital Learning at St Hilary's is renamed Digital Design and Engineering (DDE). The new name matches what pupils now do in lessons: they still learn to use technology well, but they also design, code, build and test real things.

This policy sets out the aims, principles and strategies for teaching DDE from Year 1 to Year 6. It replaces the Digital Learning Policy (last reviewed June 2025) and was developed in consultation with teaching staff.

We actively promote democracy, the rule of law, individual liberty, and mutual respect and tolerance of those with different faiths and beliefs. These fundamental British Values underpin all that we offer, as does our School Motto, 'Not for oneself but for all.' In DDE this shows in collaborative building, fair turn-taking with shared equipment, and designing solutions that help other people.

What is Digital Design and Engineering?

DDE brings together four strands:

- **Computing and coding**: algorithms, programming and how networks and AI work (Code.org, Scratch, micro:bit, LEGO Education Computer Science & AI).
- **Design and making**: designing for a purpose and an audience, using CAD and 3D printing to make physical products.
- **Engineering and physical computing**: building, controlling and testing machines and systems (LEGO, micro:bit and Makey Makey, drones, solar power).
- **Digital creativity and literacy**: touch-typing, digital publishing, photography, green screen, audio and graphic design (Book Creator, Canva, Everyone Can Create).

Online safety and the responsible use of AI run through all four strands.

Why it matters

Pupils are growing up in a world shaped by technology they did not design. DDE aims to make them creators, not only users: confident to ask how something works, to build their own version and to judge whether it is safe, fair and useful. The design–make–evaluate cycle also builds resilience, because a first attempt that fails is a normal step towards a better one.

2. Aims

By the end of Year 6, every pupil should be a confident, safe and creative maker with technology. Our aims are that all pupils will:

1. **Think computationally**: break problems down, spot patterns, and write, test and debug algorithms in block-based and text-based code.
2. **Design with purpose**: identify a need or an audience, generate ideas, and develop them through sketches, prototypes and CAD models.
3. **Make and engineer**: build, program and control physical systems (robots, drones, micro:bit circuits, 3D-printed products, solar devices) and test them against success criteria.
4. **Evaluate and improve**: explain what worked, what did not and why, and iterate on their designs.
5. **Communicate digitally**: type fluently and use digital tools to research, record, present and publish work for real audiences.
6. **Understand AI and networks**: know in age-appropriate terms how the internet, networks and AI systems work, including their limitations and biases.
7. **Stay safe and act responsibly**: protect themselves and others online, use AI honestly, and consider the impact of technology on people and the planet.
8. **Collaborate**: work in pairs and teams, sharing roles, equipment and credit, in the spirit of 'Not for oneself but for all.'

DDE also supports learning across the curriculum: pupils apply their skills in English (Book Creator, story recording), Science (circuits, solar energy, forces in drone flight), Maths (measurement and coordinates in CAD and coding) and PSHE (online safety).

The curriculum covers the statutory requirements of the National Curriculum for Computing at Key Stages 1 and 2, and contributes to the Design and Technology programmes of study for designing, making, evaluating and technical knowledge.

3. Curriculum organisation

DDE is taught as a distinct, specialist subject from Year 1 to Year 6, with one unit per half-term (six units a year). The Head of Digital Learning maintains the Long Term Plan and the Scheme of Work, which set out objectives, vocabulary and outcomes for each unit.

Progression by phase

- **Year 1–2 (Key Stage 1)**: foundations. Pupils learn keyboard skills, publish simple digital books, take and edit photos, and meet algorithms through unplugged activities, LEGO and block coding (Scratch, Code.org). They learn what AI is through LEGO Computer Science & AI and Code.ai, and the basic rules for staying safe online.
- **Year 3–4 (Lower Key Stage 2)**: from coding to making. Pupils complete structured coding courses, learn how networks and the internet work, and are introduced to physical computing with micro:bit. They learn how 3D printers work and design their first printed products in CAD, and build and fly drones.
- **Year 5–6 (Upper Key Stage 2)**: independent design and engineering. Pupils run longer projects that combine strands: designing printed products and moulds, programming micro:bit and Makey Makey inputs, planning drone navigation routes, and building solar-powered devices. In Year 6 they develop an app concept for a real-world problem and pitch it, Dragons' Den style, through Samsung Solve for Tomorrow.

LEGO Education Computer Science & AI runs in every year group, giving a consistent thread for algorithms, data and AI concepts from Year 1 to Year 6.

Early Years (Reception)

In Reception, technology is part of the EYFS curriculum through play-based activities such as programmable floor robots, iPad photography and simple sequencing games. These prepare children for DDE in Year 1.

Cross-curricular use

DDE skills are also used across the curriculum. Pupils in Years 4–6 have 1:1 iPads, and class teachers use them to research, record and present work in other subjects.

4. Teaching and learning

DDE lessons are practical and project-based, following a design cycle that pupils revisit in every unit.

1. **Investigate**: explore how an existing product or system works and who it is for.
2. **Design**: generate and record ideas through sketches, flowcharts, algorithms or CAD models.
3. **Make**: code, build, print or record a working solution.
4. **Test and evaluate**: check it against success criteria, find faults, debug and improve.
5. **Share**: present the outcome and explain the choices made.

Teaching strategies

- Teacher modelling and explicit teaching of key knowledge and vocabulary.
- Guided practice, then increasing independence as pupils move through the school.
- Unplugged activities to teach concepts before pupils use devices.
- Open-ended challenges and problem-solving tasks with more than one valid solution.
- Discussion and reflection, including talking about mistakes as part of learning.

Pupil groupings

Pupils work individually, in pairs, in small teams and as a whole class. Paired and team work is the norm for LEGO, drone and engineering units, with rotating roles (for example builder, programmer, tester, recorder) so that every pupil experiences each part of the process.

Celebrating excellence

Excellence in DDE is celebrated through:

- displays of pupils' designs, prints and projects around the school and on the school's digital channels;
- House Points and reward stickers;
- awards and certificates presented in Assembly;
- entry to external competitions and challenges, such as Samsung Solve for Tomorrow, First Lego League and Hour of Code.

Homework

Homework is not set routinely in DDE. Occasionally pupils may be asked to research a topic, gather ideas or materials, or continue a project at home at the teacher's discretion.

5. Assessment, feedback and reporting

Progress in DDE is assessed continuously against the objectives for each unit, with a short end-of-unit judgement recorded for every pupil.

Feedback

Feedback follows the school Marking Policy. Because DDE is practical, most feedback is verbal and given while pupils work: questioning, prompts to test and debug, and next steps. Written or recorded comments may be added at the end of a project. Pupils regularly self-assess and peer-assess using success criteria, and evaluate their own designs as part of the design cycle.

Evidence of learning

Much DDE work is physical or on screen, so evidence is captured as photographs, short videos, screenshots, code files, CAD files and design sketches, as well as finished products.

- **Prep**: pupils upload their work to Showbie, including photos and videos of practical work, screenshots, code and CAD files. Teachers review the work and give feedback there.

- **Pre-Prep**: pupils' work is stored in the online platforms they use, such as Book Creator, touch-typing software called Typing club and Code.ai.
- **Self-assessment**: pupils complete an online self-assessment form at the end of each unit.
- **Teacher assessment**: records are kept on all pupils on SharePoint and teacher assessments are reported half-termly.

Reporting

Reports are sent to parents at the end of the Summer Term. They comment on:

- attitude, collaboration and perseverance in design and making;
- computational thinking and coding;
- digital skills and safe, responsible use of technology.

Parents can make an appointment at any time to discuss their child's progress with the Head of Digital Learning.

Progress and continuity

- The Head of Digital Learning maintains the Long Term Plan and Scheme of Work to ensure progression from Year 1 to Year 6.
- The Learning Support Department and DDE staff work together to support pupil progress.
- Provision and outcomes are monitored by the Senior Leadership Team.

6. Inclusion, SEND and challenge

Every pupil has the same entitlement to the full DDE curriculum. Practical, hands-on units are planned so that all pupils can take part and succeed.

Pupils with special educational needs and disabilities

- Tasks are scaffolded with step-by-step build guides, visual instructions, partially completed code and adapted success criteria.
- Team roles are matched to pupils' strengths, so that every pupil contributes to a shared outcome.
- Touch-typing and other assistive technology help pupils who find handwriting difficult, and skills are practised through motivating, game-based programs.
- In Pre-Prep, pupils with additional needs are often supported by an adult during lessons.
- Staff consider sensory needs in practical units, such as noise from drones and 3D printers.

More Able, Gifted, Talented and Passionate pupils (MGTP)

More able pupils are stretched within lessons through open-ended extension challenges: more complex code, tighter design constraints, independent CAD work or extra drone navigation tasks. DDE prefects and class Digital Leaders share their expertise with peers and help lead events such as Safer Internet Day.

Pupils with a particular talent for DDE are likely to:

- learn and apply new coding, design and engineering techniques quickly;
- debug problems independently and persist when a solution fails;
- transfer skills confidently to new tools and contexts;
- design original solutions that go beyond the brief;
- explore the subject independently outside lessons.

Please see the MGTP policy for further information.

7. Online safety, AI and practical safety

Safety is taught explicitly in DDE and built into every unit, both online and in the workshop.

Online safety

Online safety covers the internet and all connected technology, including tablets, phones, games consoles, smart devices, cameras and AI tools. Pupils learn about the benefits, risks and responsibilities of using them, including privacy, passwords, digital footprints, online relationships, fake content and asking a trusted adult for help.

It is taught in DDE lessons (including a dedicated Year 1 unit and the network engineering unit in Year 3) and through the PSHE curriculum. Each year, Safer Internet Day is marked in Assembly, led by Digital Leaders. The school's filtering and monitoring systems protect pupils on the school network. Please also see the Safeguarding Policy, E-Safety Policy and Pupil E-Safety and Acceptable Use of IT Policy.

Artificial intelligence

Pupils learn how AI works through LEGO Education Computer Science & AI and Code.ai: that AI systems learn from data, can make mistakes and can reflect bias. In line with DfE guidance on generative AI in education:

- pupils use only AI tools approved by the school, under adult supervision and with age restrictions respected;
- pupils do not enter personal information about themselves or others into AI tools;
- pupils are taught to check AI outputs and to be honest about when they have used AI in their work;
- staff may use approved AI tools to support planning and resources, but remain responsible for checking their accuracy and suitability.

Practical and equipment safety

Practical units are planned with a risk assessment and clear class routines.

- **3D printers**: pupils do not touch the nozzle or print bed while printing or cooling; printers run in a ventilated area under supervision.
- **Drones**: the school uses indoor-only drones with propeller guards, flown in a set flight zone under supervision. Before flying, pupils complete a drone course that covers their own safety, the safety of others and the safe handling and care of the drones.
- **Electronics (micro:bit, Makey Makey, solar)**: only low-voltage, battery or USB power is used; batteries are checked and stored safely.
- **Food-based projects (Year 6 chocolates)**: food hygiene routines are followed and pupils' allergies and dietary needs are checked with the school's records before the unit begins.
- **LEGO and small parts**: equipment is counted out and back, with particular care for small parts in Key Stage 1.

8. Resources, roles and review

Resources

- A dedicated Computing suite with 18 workstations.
- 20 shared iPads in a trolley outside the IT Room, booked through the online booking form; 1:1 iPads for every pupil in Years 4–6.
- School 1:1 iPads in Year 5 and 6.
- Interactive whiteboards in all classrooms, with colour laser printing and scanning.
- 3D printers and CAD software.
- LEGO Education Computer Science & AI and LEGO Spike Prime and WeDo 2.0 kits.
- BBC micro:bits, Makey Makey kits and solar engineering kits.
- Indoor-only classroom drones with propeller guards.
- Green screen equipment and creative apps (Book Creator, Canva, Everyone Can Create).
- Online platforms: Code.org, Scratch, Code.ai and touch-typing software.

- Secure wireless network and internet access throughout the school, protected by a firewall and filtering and monitoring systems. The ICT Manager is in school every day to support staff and pupils.

Role of the Head of Digital Learning

The Head of Digital Learning leads DDE and will:

- lead policy development and maintain the Long Term Plan and Scheme of Work, ensuring progression from Year 1 to Year 6;
- support colleagues in planning and teaching DDE and in using technology across the curriculum;
- monitor progress in DDE and advise the Head on action needed;
- manage the DDE budget, equipment and consumables (including 3D printing filament and LEGO sets);
- complete and review risk assessments for practical units;
- keep up to date with developments in computing, design, engineering and AI in education, and share them with colleagues;
- lead staff training in DDE and online safety;
- develop partnerships and competitions, such as Samsung Solve for Tomorrow.

Related policies

Safeguarding Policy; E-Safety Policy; Pupil E-Safety and Acceptable Use of IT Policy; MGTP Policy; Marking Policy; SEND Policy; Health and Safety Policy.

Further information

- DfE, Keeping Children Safe in Education 2026 (in force from 1 September 2026)
- DfE, Generative artificial intelligence in education
- DfE, Teaching online safety in schools
- UKCIS, Education for a Connected World (2020)
- DfE, National Curriculum in England: Computing and Design and Technology programmes of study

Review

This policy replaces the Digital Learning Policy (reviewed June 2020, 2021, 2022, 2023, 2024 and 2025).

- Adopted: October 2026
- Next review: June 2027
- Person(s) responsible: James South (Head of Digital Learning), Mr S Mansell (ICT Manager)